



Contribution ID: 167

Type: **Poster**

Monitoring selectivity of gold cluster growth/formation on antifouling-relevant zwitterionic thin block copolymer coatings

Wednesday, 11 December 2019 15:40 (20 minutes)

Polysulfobetaine (PSB) films serve as promising antifouling coatings [1]. In addition, metal-coated thin polymer films hold also tremendous potential for antifouling and antibacterial applications [2]. However, the exact limit to how much one may tune antifouling by means of altering the block copolymer nanostructure with a metal sputtered on top of the polymer remains practically unexplored. Schwartzkopf et al. [3] have shown that sputtered gold can exhibit wetting selectivity with different affinities in each constituent of a PS-b-PEO block copolymer film. The correlation between gold growth and affinity to the particular polymer phase of the PSB copolymer structure and its impact on antifouling efficiency remain elusive. By in-situ microfocus GISAXS (μ GISAXS) we present the nanostructure evolution of gold film growth on thin (<100 nm) polymer films. We compare poly (N-isopropyl methacrylamide) (PNIPMAM) homopolymer, PNIPMAM-b-PSB diblock copolymer and a PSB homopolymer. We inspect for potential selectivities during gold sputtering on these polymer films and potential correlation between polymer-metal nanocomposite structure to antifouling efficiency.

- [1] A. Laschewsky, A. Rosenhahn, Langmuir 35 (5), 1056 (2019)
- [2] J. Ren, P. Han, H. Wei and L. Jia, ACS Appl. Mater. Interfaces 6, 3829 (2014)
- [3] M. Schwartzkopf et al., ACS Appl. Mater. Interfaces 9, 5629 (2017)

Primary authors: Dr VAGIAS, Apostolos (Heinz Maier-Leibnitz Zentrum (MLZ), Technische Universität München, 85748 Garching, Germany); SCHAPER, Simon (TU München, Physik-Department, Lehrstuhl für Funktionelle Materialien); KREUZER, Lucas (TU München, Physik Department, E13); CHEN, Wei (Technische Universität München); LIANG, Suzhe (Physical Department, TUM); Mr GENSCH, Marc (DESY); PANDIT, Pallavi (DESY); SCHWARTZKOPF, Matthias (DESY); Prof. ROTH, Stephan (DESY); Mr DREWES, Jonas (CAU zu Kiel, Institut für Materialwissenschaft, LS Materialverbunde, Kiel); Mr CARSTENS, Niko (CAU zu Kiel, Institut für Materialwissenschaft, LS Materialverbunde, Kiel); Dr STRUNSKUS, Thomas (CAU zu Kiel, Institut für Materialwissenschaft, LS Materialverbunde); Prof. FAUPEL, Franz (CAU zu Kiel, Institut für Materialwissenschaft, LS Materialverbunde); Prof. LASCHEWSKY, André (Institut für Chemie, Universität Potsdam, and Fraunhofer-Institut für Angewandte Polymerforschung, Potsdam-Golm,); MÜLLER-BUSCHBAUM, Peter (TU München, Physik-Department, LS Funktionelle Materialien)

Presenter: Dr VAGIAS, Apostolos (Heinz Maier-Leibnitz Zentrum (MLZ), Technische Universität München, 85748 Garching, Germany)

Session Classification: Poster session

Track Classification: Soft Matter